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United States
Department of
Agriculture

Forest
Service

Southwestern
Region

Integrated Resource Management

The Road To Ecosystem Management
Fourth Edition

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IRM • FORWARD

This is the fourth Integrated Resource Management desk guide. This edition is different from the previous editions in that it guides the forest plan to proposed action analysis (NFMA); the site-specific environmental analysis for a proposed action (NEPA); and monitoring. The previous editions focused mainly on site-specific environmental analysis. This edition blends Region 3's Integrated Resource Management process with the national planning model from 1900-1 courses. As in previous editions, this desk guide facilitates compliance with the National Forest Management Act (NFMA) and the National Environmental Policy Act (NEPA) and their implementing regulations as well as with other environmental laws and regulations such as the Endangered Species Act, Clean Water Act, and others.

The purpose of Integrated Resource Management (IRM) is to GUIDE identification, design, and monitoring of proposed actions to:

- Comply with legal requirements.
- Get people involved.
- Analyze and disclose environmental effects.

and most importantly to:

- Successfully apply an ecosystem approach to forest plan implementation through QUALITY actions.

Working in an interdisciplinary setting; following a large number of environmental laws, rules and regulations, policies; and simultaneously responding to the needs of a diverse public is a difficult, complex task. IRM reduces the complexity and magnitude of the task through a logical sequence of process steps.

IRM is a philosophy about proposed action identification, design and monitoring. IRM is a way of thinking about the components necessary for an ecosystem approach to quality forest plan implementation.

The major components of IRM are:

PROPOSED ACTION IDENTIFICATION
- Locate an area.
- Describe existing conditions.
- Describe desired future conditions.
- List possible management practices.
- Develop proposed action and purpose and need.

PROPOSED ACTION DESIGN
- Scoping.
- Environmental analysis.
- Environmental documentation.
- Implementation.

MONITORING
- Monitor programs and actions.

This book should be used as as a guide to thinking through and documenting quality actions. Process managers may begin at any step if information exists or is not needed for previous steps. Process managers have the discretion to vary the detail and intensity of process steps. However, the basic thought process should be the same for all planned actions. The process is broken into steps to clarify the logical sequence for sound planning and analysis. However, the process is not always linear. Several steps may be in progress at once and some steps may have to be revisited as the analysis proceeds.

At each step, key roles, products, and times for field review have been identified. However, it is expected that line officers will be involved throughout and that field work will take place when ever needed, not just in key situations.

The Documentation Desk Guide, which is a companion to this desk guide, has also been prepared. The Documentation Desk Guide provides standard format and content requirements for many of the documents listed as products in Integrated Resource Management.

IRM • STEP 1 - LOCATE AREA

STEP OBJECTIVE

What place should be analyzed? Locate and prioritize an area(s) for analysis.

NARRATIVE

In this step, areas are identified and prioritized for analysis. Forest plans should be disaggregated into ecosystem management areas. The areas should be large enough for a meaningful ecosystem analysis, but should be small enough that timely and effective analysis can be done. Typically, areas would be 10,000 to 100,000 acres. However, smaller or larger areas can be analyzed based on the area characteristics, public desires, potential issues, geographic location, and areas of social influence.

The line officer should assign an analysis team and team leader to do the step 1-5 analysis of each ecosystem management area as it comes up in priority order. The analysis team would typically consist of 3-5 people with the variety of skills needed to produce the products in Steps 1-5.

Ecosystem management areas should have identifiable boundaries and be locatable on photos and maps and may cross ownership boundaries. Topographic features such as watershed boundaries make good area boundaries. It is more important for areas to be locatable, contiguous, consistent with human dimensions and use patterns, and function as an integrated unit than to be biologically homogeneous. Ecosystem management areas are roughly equivalent in scale to landscapes in the *National Hierarchical Framework of Ecological Units for Ecosystem Classification*. Ecosystem management areas, as defined here, are administrative delineations based on human dimensions and use patterns as well as physical and biological factors. Ecosystem management areas or groups of ecosystem areas could replace the original management areas as forest plans are amended or revised.

Some possible criteria for prioritizing ecosystem management areas for analysis are:

- Areas with resource conflicts.
- Areas of high public interest.
- Areas of high commodity production potential.
- Areas of high recreation potential.
- Areas where monitoring is shown past actions were ineffective or there is a need for additional actions.
- Areas with rare or sensitive components.
- Areas where monitoring has shown diversity or productivity has been lost.
- Areas impacted by natural disasters.
- Areas of epidemic insects and diseases.
- Areas where health and safety are at risk.
- Areas not fulfilling forest plan goals and objectives.

Ecosystems vary across spatial and temporal scales. Any action taken at one ecosystem scale should be done with an awareness of how larger and smaller scales are affected. Ecosystem management should be guided by an understanding of natural and human induced variability occurring in a area over time and space. At this step, the ecosystem one scale larger and one scale smaller that was selected for analysis should be identified. Typically, the next larger scale might be the ecosubregion and the next smaller scale might be the land unit as defined in the *National Hierarchical Framework of Ecological Units for Ecosystem Classification*. For example, if the Carrizo Diversity Unit is identified as the ecosystem management area, the next scale larger might be the pinyon-juniper type in the Capitan mountains. These scales should be identified based on logical connections. There is no formula or set biological prescription to follow. The line officer and analysis team have the latitude and responsibility to define the ecosystem scales for analysis purposes.

There may be many instances when project proposals have been made before ecosystem management areas are identified and prioritized. In these cases, the project area or land unit scale would be the area picked for analysis. For example an ecosystem management area might contain 3 grazing allotments, 2 potential timber sales, and a major potential developed recreation site. Through a recreation initiative, Congress has funded the recreation site but the ecosystem management area has not been analyzed yet. In this case, the area picked would be the potential recreation site.

Once an area has been picked, descriptive parameters which will be used in steps 2 and 3, should be listed. The descriptive parameters should include parameters for human dimensions, production potential, and physical/biological characteristics. For example, descriptive parameters for human dimensions might include community stability, spiritual renewal, sense

of remoteness, or frontier individualism. For production potential examples might be sustained wood products, dispersed non roaded recreation opportunity, or quality deer hunting. Physical/biological characteristics examples might include disturbance frequencies, percent of vegetation structural stages, size and distribution of openings, or percent of ground cover. Social influence zones affected by actions on the ecosystem management area should be identified for each area and be linked to the descriptive parameters.

Process record and index should be started at this step. The quarterly schedule of proposed actions should be updated.

A public participation plan to obtain public involvement for the first five steps should be developed. The public should participate in criteria for area selection and priority, describing the desired conditions and providing information on existing conditions. It is expected that the public participation plan would identify individuals, groups, and agencies interested and affected by potential future actions in the ecosystem management area or that have information needed to complete Steps 1-5. Public participation for Steps 1-5 may often be with a more focused interest group of public participants than for the remainder of the process (Steps 6-11).

Indian tribes and local governments should always be consulted early to identify traditional cultural properties and local customs and cultures. Each forest should develop procedures sensitive to traditions of their local tribes.

STEP 1 ROLES AND RESPONSIBILITIES

Line Officer	Analysis Team	Public
Approve and prioritize ecosystem management areas.	Delineate and map ecosystem management areas.	Participate in area deliniation.
Select area(s) for analysis.	Develop list of threatened, endangered, proposed species.	Participate in listing descriptive parameters to describe area selected.
Appoint analysis team leader.	Develop list of descriptive parameters.	
Appoint analysis team.	Start process record and index.	
Prepare analysis initiation letter.	Develop public participation plan, including Indian tribes and local governments.	
Approve descriptive parameters.	Update schedule of proposed actions.	

STEP 1 PRODUCTS

- List of ecosystem management areas prioritized for analysis.
- Map of area for this analysis.
- Identification of next larger and next smaller ecosystem unit.
- List of threatened, endangered, or proposed species occurring in identified area for concurrence by USFWS.
- List of descriptive parameters that will be used to describe existing and desired future conditions for the area picked.
- Process record and index started.
- Public participation plan for Steps 1-5.
- Updated schedule of proposed actions.
- Analysis initiation letter.
- Social influence zones identified.
- List of human demands and needs.

IRM • STEP 2 - DESCRIBE EXISTING CONDITIONS

STEP OBJECTIVE

What is the area like now? Gather and describe existing and pre-columbian human dimensions, production, and physical/biological conditions for the area selected in Step 1.

NARRATIVE

In this step, data is gathered and descriptions written for all the descriptive parameters listed in Step 1. Information would be gathered from:

- Files, geographic information systems, photos, maps.
- Management plans, conservation strategies, recovery plans.
- Data bases.
- Researchers, universities, subject matter experts.
- Literature.
- Inventories, surveys.
- Forest plan.
- Environmental documents.
- Members of the public.

This is the step where field surveys and inventories would be started. However, surveys and inventories should be done only when the existing condition information for a descriptive parameter is not available from an existing source. Survey and inventory intensity should be the minimum needed to determine the existing condition for a given descriptive parameter. Field trips with public participants are often productive at this step to familiarize the public with existing conditions.

The precolumbian conditions should also be estimated for each descriptive parameter. Precolumbian conditions are useful for understanding ecosystem forces and disturbance frequencies that have shaped the existing condition and help define the capability, resiliency, and sustainability of the ecosystem area. Literature and research may provide information on precolumbian conditions, but many precolumbian conditions may have to be estimated.

The inventoried existing conditions and the estimated precolumbian conditions for the descriptive parameters should provide the basis for the analysis team to estimate the capability and sustainability of the ecosystem management area. An estimate of the capability and sustainability of the area is important for defining desired conditions and suggesting possible management practices in Steps 3 and 4.

STEP 2 ROLES AND RESPONSIBILITIES

Line Officer	Analysis Team	Public
Approve existing and precolumbian condition descriptions.	Gather, compile, and describe existing and precolumbian condition information.	Provide data.
	Map data as needed.	
	Make data base entries.	
	Estimate ecosystem managament area capability and sustainability.	

STEP 2 PRODUCTS
• Descriptions and/or maps of existing condition for all descriptive parameters listed in Step 1. • Descriptions and/or maps of precolumbian condition for all descriptive parameters listed in Step 1. • Updated process record and index. • Updated data bases.

IRM • STEP 3 - DESCRIBE DESIRED CONDITIONS

STEP OBJECTIVE

What should the area be like? Describe desired human dimensions, production, and physical/biological conditions for the area selected in Step 1.

NARRATIVE

In this step, the desired condition is described and mapped for all the descriptive parameters listed in Step 1. The desired condition should be sustainable over time and describe the desired human dimensions, production, and physical/biological conditions for the area. Some of the area may already be in the desired condition, while other parts of the area may require years of management to achieve desired condition. The same descriptive parameters would be used to describe both existing and desired conditions. For example, if one descriptive parameter is percent shade over a stream, then the existing percent shade and desired percent shade would be described.

Desired conditions would be developed from the forest plan, public participation, previous environmental analyses, descriptions of existing and precolumbian conditions, and from estimates of ecosystem capability, sustainability, and variability. Both spatial and temporal considerations of ecosystem functions should be used in describing desired conditions. Desired conditions should contribute to the long-term sustainability of large scale ecosystems.

Desired conditions descriptions are essentially the management goals for the area selected. The desired condition should include descriptions of human dimensions, production, and physical/biological conditions for the area. The rationale for describing the desired conditions should be well documented in the process record. The rationale should be based on ecosystem capability, sustainability, variability, functions, and human dimensions.

Steps 1, 2, and 3 are the major milestones on the road to ecosystem management.

STEP 3 ROLES AND RESPONSIBILITIES

Line Officer	Analysis Team	Public
Approve desired conditions.	Describe and map conditions.	Participate in developing desired conditions.
	Facilitate public participation.	
	Document rationale for desired conditions.	

STEP 3 PRODUCTS
• Approved descriptions and/or maps of desired conditions for all descriptive parameters listed in Step 1. • Updated process record and index. • Updated data bases.

IRM • STEP 4 - LIST POSSIBLE MANAGEMENT PRACTICES

STEP OBJECTIVE

How can desired conditions be achieved? Develop a list of possible management practices which will cause incremental changes from existing toward desired conditions.

NARRATIVE

Once existing and desired conditions have been described, they can be overlayed like map overlays. The overlays could be data overlays or human dimensions overlays. Where existing and desired conditions do not match, there are management opportunities and management needs.

After areas where existing and desired conditions do not match have been identified, a list of possible management practices which would change existing conditions toward desired condition should be developed and prioritized. This list is an inventory of potential proposed actions that may be selected to respond to management needs, budgets, and targets.

Once the inventory list of possible practices has been completed, it is usually a good idea to group practices that would be connected actions, similar actions, possible categorical exclusions, high priority, or other logical groupings.

The list of possible practices or groups of practices should be included in data bases for use in the budget process. One possible practice might be a forest plan amendment to make the selected area a separate management area with the explicitly described desired condition.

Whenever possible, management practices should mimic the intensity, frequency, and area extent of historic disturbance events in an effort to maintain biological diversity and keep disturbance events within the ecosystem's absorbing capability and resiliency.

The list of possible practices or groups of possible practices should be assessed for forest plan consistency, applicable National Forest Management Act findings, and economic, social, and technical feasibility. Economic, social, and technical feasibility may be determined by answering the following questions.

- Technical Feasibility - Can this practice be done with available skills and equipment?

- Social Feasibility - Can sufficient agreement be obtained at reasonable expense from individuals and/or groups against the practice?

- Economic Feasibility - Is the practice affordable? Do receipts and costs make good sense? Is the practice the most efficient location and way to meet objectives and resolve issues?

One possible practice might be an overview monitoring program. The overview monitoring program should identify key descriptive parameters to be measured that would provide information on whether or not desired conditions are being achieved.

STEP 4 ROLES AND RESPONSIBILITIES

Line Officer	Analysis Team	Public
Approve and prioritize list of possible practices and groupings.	Develop list of possible practices.	Suggest possible practices.
Approve overview monitoring program.	Assess economic, social, technical feasibility.	Suggest overview monitoring needs.
	Develop overview monitoring program for desired conditions.	
	Assess forest plan consistency.	
	Group practices into logical groups.	

IRM • STEP 4 - LIST POSSIBLE MANAGEMENT PRACTICES

STEP 4 PRODUCTS
• Prioritized list of possible management practices. • Economic, social, and technical feasibility noted for each possible practice. • Forest plan consistency noted for each possible practice. • Updated process record and index. • Updated data bases. • Overview monitoring program for desired conditions.

IRM • STEP 5 - DESCRIBE PROPOSED ACTION AND PURPOSE AND NEED

STEP OBJECTIVE

What should be done first and why? Select one or more possible practices and describe as a proposed action. Describe the purpose and need for the proposed action.

NARRATIVE

The responsible official (line officer) selects one or more possible practices from the list developed in Step 4 as a proposed action. Proposed actions would be selected from the Step 4 possible practices list based on purpose and need, priority, feasibility, budgets, targets, golden opportunity, or best intuition.

The proposed action description includes three parts:

- Description of purpose and need for proposed action.
- Description of proposed action.
- Description of decision to be made.

The proposed action is described in detail. A proposed action is a proposal by the Forest Service to authorize, recommend, or implement an action; or is a proposal from an external source that the Forest Service agrees to move forward with. There are four important components of a detailed proposed action description: Who, What, Where, and When.

● WHO: This refers to sponsorship. Who wants the action? For internally generated actions, it is the Forest Service.

In the case of external proposals it is the name of the person or organization making the request. Remember however, that the agency must accept and agree to carry the proposal into environmental analysis before it can be considered a proposed action.

For example: Arizona Department of Transportation is proposing to stabilize and shape slopes between mileposts 37 and 48 on Highway 89 during July and August of 1997. The Coconino National Forest has agreed to analyze the proposal and decide on whether or not to allow implementation of the proposal or some alternative to it.

● WHAT: Refers to the specific proposed action or group of actions. In stating the "what" of the proposed action, be as specific as possible. As an example, a proposal to "plan" for activities in an area is not specific enough. "Planning" does not constitute a what.

The what portion of the proposed action description should include all connected actions and may include other similar and cumulative actions if desired by the line officer. Connected, similar, and cumulative actions are as follows:

● Connected Actions - Actions which are closely related and which:

○ Automatically trigger other actions. Everyday example - Putting on your running shoes automatically triggers tying your shoes. Resource example - Timber harvest followed by prescribed burning for site prep.

○ Cannot or will not proceed unless other actions are taken previously or simultaneously. Everyday example - Putting on your running shoes is preceded by putting on your socks. Resource example - Timber harvesting cannot proceed without the roads to access the timber.

○ Are interdependent parts of a larger action for their justification. Everyday example - Putting on your shoes is a small part of the larger action of getting dressed. Resource example - Building a fish ladder without building a dam.

● Similar Actions - Similar actions are actions which have similarities that provide a basis for analyzing their environmental consequences together, including common timing and geography. An example might be two timber sales which are proposed to take place at the same time and in the same watershed.

● Cumulative Actions - Are actions which, when viewed with other proposed actions, have cumulative significant impacts and should therefore be considered in the same analysis. Again, they must be ripe for decision in order to be considered as part of the proposed action. An example would be a series of small hydroelectric facilities on a river to provide power for a community.

If two or more proposed actions are "ripe for decision", and are connected, they must be considered together as part of proposed action. On the other hand, if actions are not connected but are "ripe for decision", they generally should not be considered together as

part of a proposed action, because the environmental analyses can become unnecessarily complicated. Covering them under separate analysis will ensure that the site specific effects of each action are thoroughly documented and that reasonable alternatives are developed for each action.

In the case of both similar and cumulative actions, they do not necessarily need to be part of the proposed action even if they are ripe for decision. One may be tempted to combine several similar or cumulative actions in a geographical area into a proposed action, but be cautious as this can lead to large areas being considered with multiple actions. Again, this results in complex analyses and disclosures of site specific environmental effects.

In summary, the line officer has the option to consider either similar or cumulative actions in separate proposed actions. However, considering and disclosing the effects of similar and cumulative actions is not optional.

Although it would appear that this is a hard and fast rule, it is not always clear whether 2 or more actions are in fact connected, and some latitude does exist for including or not including in the same analysis. In situations where there is doubt, for simplicity it is usually best to analyze actions separately. The above discussion of connected, similar, and cumulative actions is summarized in the following table.

Type of Actions	Include in Proposed Action?	Analyze Effects in NEPA Document?
Connected	Yes	Yes
Similar	Optional	Yes
Cumulative	May depend on significance of effects	Yes

● WHERE: Be as site-specific as possible in regard to location. A map is a good way to show "where" rather than trying to describe in text--although in some cases the legal land description is appropriate.

● WHEN: This refers to the time the project will begin and when it will end. If the project has identifiable major phases, duration of the phase should also be noted. Another aspect of "when" is deciding if the project is really ready for decision and analysis. This is not always as easy as it sounds. Consideration needs to be given to whether a particular activity is "ripe for decision" or not.

To determine if something is ripe for decision look ahead to when the particular activity will be implemented. If implementation is more than 5 years away it is doubtful whether it is ripe for decision because as rapidly as things change, it may be unlikely that a decision made today will be adequate 5 years from now. There is no hard and fast rule on actual time frames, if implementation is less than 3 years away it is probably "Ripe for Decision", if more than 5 years it is probably not, and between 3-5 depends on the situation.

● WHY: The purpose and need for the proposed action are described. Purpose and need describe WHY this action is being proposed at this time. Purpose and need are based on comparison of existing conditions against desired conditions described in Steps 2 and 3. The difference between existing and desired future conditions that this proposed action will be designed to correct is briefly summarized. There should be a clear and easily stated need for the proposed action based on existing and desired conditions or the proposal should be dropped. Specific objectives are part of the purpose and need description.

The nature of the decision to be made is briefly described and the responsible official identified. The nature of the decision helps define the scope of the analysis and reflects what will be decided in this proposed action. A proposed action may be a single practice such as building a fence or designing a timber sale. A proposed action may be a group of practices such as several timber sales or a timber sale and trail relocation. A proposed action might be a programmatic analysis and decision such as a forest plan amendment.

At this step an interdisciplinary team leader and interdisciplinary team are appointed by the line officer. This may be the same group of people that made up the analysis team and worked on Steps 1-4, but often will be different people. The teams are identified by different names to distinguish between the group of

people analyzing ecosystem management areas to identify proposed actions and the group of people analyzing the site specific environmental effects of an identified proposed action in compliance with the requirements of the National Environmental Policy Act. More than one team may be appointed to analyze several proposed actions within one ecosystem management area.

A proposed action initiation letter is prepared by the line officer making the interdisciplinary team assignments.

The schedule of proposed actions should be updated.

STEP 5 ROLES AND RESPONSIBILITIES

Line Officer	Interdisciplinary Team	Public
Select proposed action.	Write description of proposed action; purpose and need, and decision to be made.	
Assign interdisciplinary team leader.	Update schedule of proposed actions.	
Assign core interdisciplinary team.		
Prepare proposed action initiation letter.		
Approve description of proposed action; purpose and need, and decision to be made.		

STEP 5 PRODUCTS
• Approved description of proposed action including a detailed description of proposed action and description of decision to be made, purpose and need for action. • Proposed action initiation letter assigning interdisciplinary team leader and core interdisciplinary team. • Updated process record and index. • Updated schedule of proposed actions.

IRM • STEP 6 - DEFINE ANALYSIS SCOPE

STEP OBJECTIVE

What do people think of the proposal? Describe the scope of environmental analysis for the proposed action described in Step 5.

NARRATIVE

Step 6 is used to define the limits of analysis for the proposed action described in Step 5. The scope of analysis will depend on the specific proposal objectives, purpose and need for the proposal, nature of decision, environmental analysis requirements, potential alternatives, and major issues created by the proposed action. The specific proposal objectives, purpose and need for proposal, and nature of decision were already described in Step 5.

This step is where major public participation occurs. One of the first jobs of the core interdisciplinary team is to develop a public participation plan for the rest of the analysis. The public participation plan identifies who is interested or potentially affected by the proposed action and outlines the methods, timing, and expected results for public involvement. Emphasis should be placed on Indian tribes and local governments. Some public participation may have to be done on projects that may be categorically excluded to determine if extraordinary circumstances may be affected.

A scoping report to solicit public participation on the proposed action would normally be prepared at this step. A scoping report would include a description of purpose and need, the proposal, decision to be made, preliminary issues, preliminary alternatives, nature of comments requested, and process time frame.

In this step, first evaluate the proposed action to see if it fits one of the categories of actions described in Chapter 30 of Forest Service Handbook 1909.15, which may be categorically excluded from documentation in an environmental assessment or environmental impact statement. If the proposed action fits one of the categories, enough scoping including public participation, should be done to determine if the proposed action may significantly affect one of the extraordinary circumstances listed in the handbook. If threatened or endangered species are affected or other extraordinary circumstance are significantly affected, then the proposed action can not be categorically excluded and the rest of the process is followed as described in Steps 6 and 7. If threatened or endangered species are not affected and other extraordinary circumstances are not significantly affected, the biologist/botanist would prepare a short form biological assessment and evaluation and the analysis would skip ahead to Step 8.

Using existing information, previous environmental analysis, and public participation, the interdisciplinary team identifies the major issues created by the proposed action. An issue is a problem or concern that would occur because of the proposed action. The interdisciplinary team should try to trace and group the potential issues based on cause and effect relationships. Many initial issues are effects and symptoms of the real issues. For example, increased erosion may lead to increased stream sedimentation and decreased fish spawning success. The linked cause and effect relationships are the real issue to be analyzed.

Interdisciplinary teams may use the following process to identify and track major issues. The process is iterative and consists of four basic steps.

- Preliminary issues are identified prior to external or public scoping and included in the scoping report.
- Group issues based on cause and effect relationships and public comments, common resource, common geography, etc.
- Clarify issues to express site specifically what problem or concern would be caused by the proposed action.
- Identify major issues.

A good way to determine whether or not an issue is major is to determine the scope of the issue. The scope of an issue is measured by three factors.

- Extent of an issue refers to the geographic distribution of the issue.
- Duration is a measure of the length of time an issue is likely to be of interest.
- Intensity is the level of interest or conflict generated by the issue.

If an issue is not major and not considered in the development of alternatives and the subsequent environmental analysis the reason should be documented. In many instances, this documentation can and should be carried into the environmental assessment or environmental impact statement.

Some reasons for not considering an issue in the environmental analysis are:

- Outside the scope of the proposed action (Solving the national debt with a timber sale program).
- Already decided by law, regulation, Forest Plan, etc. (wilderness is a good example).
- Irrelevant to the decision to be made (deer hunting season is set by the State not the Forest Service).
- Not supported by scientific evidence (construction of a 110 KV power line will cause mental illness by constant exposure to the line).
- Limited in extent, duration, and intensity.

Once major issues have been identified and described, the scope of the environmental analysis can be defined. The scope of the environmental analysis is defined by listing quantifiable and non-quantifiable measures that will be used to portray the effects of each of the alternatives analyzed. Measures are required in each of the five environmental components (water, air, soil, wildlife, vegetation), any major issues not already contained in one of the five environmental components and for describing alternatives. Many of the measures may have been described for the existing condition at Step 2.

The issue identification process can usually be used to focus the analysis done for each of the five environmental components. For example, it might be determined that flooding is a concern of downstream residents so acre-feet of water yield may be selected as the appropriate measure used for water effects, rather than sediment or water temperature.

There are two basic classes of measures. Some measures are needed to describe alternatives and some are needed to disclose environmental effects. Both are helpful in measuring how well an alternative responds to major issues and specific objectives. Measures are used by the resource specialists in environmental analysis and documentation and should not be confused with decision criteria used by the line officers to select a course of action. Line officers add value judgements like "this alternative is best" or "this alternative doesn't do as well as." Measures used by the specialists to evaluate alternatives should be as objective as possible and not contain value judgements.

Descriptive measures usually are displayed in the "Alternatives" section of environmental documents. Being merely descriptive, these measures can easily be displayed in a table and normally do not require any specialist interpretation. In essence, these measures are objective facts that describe characteristics of the alternatives.

Disclosure measures provide information on the environmental and socio-economic effects of the alternatives. Quantified measures can be easily displayed in individual environmental effects sections; however, almost always these measures require a narrative interpretation. A discussion of the significance of the effect is particularly important. These criteria appear in the "Affected Environment and Environmental Consequence" sections of the environmental document.

Examples of Measures

Descriptive	Disclosure
Logging Method (acres)	Vegetation Age Classes (acres/by age)
Timber Volume (MMBF)	Old Growth Harvested (acres)
Unroaded Area (acres)	Overstory Cover (percent)
Semi-primitive Area (acres)	Financial (Present Net Value dollars)
Road Construction (miles)	Snags (numbers/acre)
Road Closures (miles)	Habitat Capability (percent)
Fuel Treatment (acres/type)	Spotted Owl Core Affected (acres)
Water Developments (numbers)	Water Yield (acre feet/year)
Broadcast Burns (acres)	Stream Crossings (numbers)
Turkey Nest Piles (numbers)	Soil Loss (tons/year)

Develop a list and map of other past, present, and reasonably foreseeable actions that may contribute to cumulative effects. The past, present, and reasonably foreseeable actions may vary by issue area. A good technique is to map the issue influence area for each major issue. For example, if the major issue is related to deer winter range for a particular deer herd, the issue influence area would be that herd's winter range. A map and list of reasonably foreseeable actions would be prepared for the winter range. Influence areas will vary for different issues, particularly for wildlife, watershed and air issues.

Develop a list of skills needed to complete the analysis and develop a work plan that assigns responsibilities and time frames for completion of the analysis. The skill needs are based on the listed measures to be completed for each alternative. Specialists other than those assigned to the interdisciplinary core team may have to be used.

When major issues, measures, and issue areas have been defined, the core interdisciplinary team should visit the proposed action area and conduct an overview reconnaissance. This extensive reconnaissance is used to verify the issues and measures. Often public participation in this field trip can be useful.

STEP 6 ROLES AND RESPONSIBILITIES

Line Officer	Interdisciplinary Team	Public
Approve categorical exclusion.	Determine if extraordinary circumstances are affected.	Suggest issues, measures, alternatives.
Approve public participation plan.	Develop public participation plan.	
Make key public contacts.	Develop major issues.	
Approve major issues.	Develop list of measures.	
Approve measures.	Define and map issue areas and list past, present, and reasonably foreseeable actions for each issue area.	
Approve analysis plan.	Develop skill needs and work plan.	
Approve scoping report.	Extensive reconnaissance.	
	Prepare scoping report.	
	Prepare short form BA&E for categorical exclusions.	

STEP 6 PRODUCTS
• Approved public participation plan. • Approved major issues. • Approved measures. • Approved alternatives. • Approved analysis work plan. • Updated process record and index. • Scoping report. • Short form BA&E categorical exclusions.

IRM • STEP 7 - DEVELOP ALTERNATIVES

STEP OBJECTIVE

Is there another way to do it? Develop alternatives to the proposed action to be analyzed in detail.

NARRATIVE

Preliminary alternatives were identified in Step 6 and included in the scoping report. At this step, the interdisciplinary team reviews the results of public participation and using the major issues and the purpose and need for action develops alternatives to the proposed action which will be analyzed in detail in Step 8.

The interdisciplinary team must consider the no action alternative in detail and should make sure that each major issue is resolved in one or more alternative to be analyzed in detail. The interdisciplinary team should develop and analyze in detail any reasonable alternatives suggested by the public or other agencies. The team should develop reasonable alternatives to represent minority view points when there is substantial disagreement over the approach to resolving issues within the team or with the public.

Alternatives, except for no action, which do not contribute to meeting the purpose and need, are technologically feasible, are duplications of other alternatives, reflect decisions already made, would cause unreasonable environmental harm, cannot be implemented, and are remote or speculative may be eliminated from detailed analysis as unreasonable alternatives.

There are two interpretations of the no action alternative. One interpretation is continuing current management. This interpretation covers planning kinds of actions such as a forest plan, allotment grazing strategy, or prescribed natural fire plan. The second interpretation is not doing the action at this time or place. This interpretation covers the majority of prepared actions such as timber sales, wildlife guzzlers, or building a campground. The appropriate interpretation of no action must be included in the range of alternatives considered in detail.

Alternatives are used to evaluate different ways to resolve major issues and satisfy the purpose and need for action. No single alternative will completely resolve all major issues or satisfy the purpose and need. Interdisciplinary teams should strive to analyze, in detail, a wide range of reasonable alternatives that provide the line officer with the best possible choice for resolving issues and satisfying purpose and need. Gaps in the range of alternatives to be considered in detail should be identified and filled at this step.

Substantial and parallel site specific treatment should be given to each alternative considered in detail including the no action alternative. For example, if semi-primitive acres and road closure miles were descriptive measures listed in Step 6, then the semi-primitive acres and road closure miles would be included in the description of each alternative. All of the descriptive measures listed in Step 6 should be described for each alternative. It is usually a good idea to have a detailed map of each alternative. Alternative descriptions should be objective and avoid qualitative statements indicating one alternative may be superior or inferior to others.

Mitigating measures designed to reduce or prevent undesirable effects are part of the alternative design and should be included in alternative descriptions.

It is usually beneficial at this step to provide a public participation opportunity to get public review of the alternatives proposed for detailed analysis. The range of alternatives to be considered in detail should be approved by the line officer.

Many alternatives may have been suggested which were not analyzed in detail. All of these alternatives and the reasons they were dropped from detailed analysis should be noted in the process record.

STEP 7 ROLES AND RESPONSIBILITIES

Line Officer	Interdisciplinary Team	Public
Ensure a wide range of reasonable alternatives were considered in detail.	Develop alternatives.	Provide alternatives and comments on alternatives.
Approve alternatives to be analyzed in detail.	Develop mitigation measures.	
	Cover all major issues.	
	Note alternatives dropped from detailed analysis.	

STEP 7 PRODUCTS
• Approved alternatives to be considered in detail. • Notes on alternatives dropped from detailed analysis. • Updated process record and index.

IRM • STEP 8 - ANALYZE PROPOSED ACTION AND ALTERNATIVES

STEP OBJECTIVE

What are the consequences? Using the list of measures developed in Step 6, describe each measure for each alternative. Identify the preferred or selected alternative.

NARRATIVE

In this step the core interdisciplinary team and needed additional specialists develop the data and information for each of the measures listed in step 6 for each alternative. Inventories, surveys and intensive field reconnaissance is done at the beginning of this step to get information needed to describe the measures for each alternative. Data and information gathered covers each listed measure and covers the issue area and all past, present, and reasonably foreseeable actions. Data displays would show the quantity or qualitative discussion of the measure for the proposed action, alternatives to the proposed action, and the incremental additional amount of the measure produced by other past, present, or reasonably foreseeable actions.

As an important element of ecosystem management, the impact of this proposal on larger and smaller ecosystem scales should be considered.

Core interdisciplinary team members and other needed specialists prepare specialist's reports documenting their quantification or qualitative description of the measures as produced by each alternative. Specialist's reports document all assumptions, references, and findings of the specialist. If the measures estimated for any alternative are based on mitigation measures being in place, the specialist's report lists those mitigation measures. The specialist's report is an objective portrayal of the effects of each alternative using the measures to define the effects.

When the analysis and evaluation of alternatives against the measures is completed, the core interdisciplinary team presents the results to the line officer.

An alternative to be implemented or a preferred alternative for an environmental impact statement is selected by the appropriate line officer. The line officer may include instructions on how to modify or refine any or all of the previously conducted analysis, which will require recycling back to previously conducted steps.

Another important line officer role during this step is to determine if the analysis will be documented in an environmental assessment or an environmental impact statement.

The public is often interested in the analysis of the alternatives. It is often a good practice to present the analysis and evaluation of alternatives to the public before the presentation to the line officer.

STEP 8 ROLES AND RESPONSIBILITIES

Line Officer	Interdisciplinary Team	Public
Approve analysis and evaluation of alternative.	Analyze all alternatives.	Provide comments on alternatives analysis.
Pick preferred or selected alternative.	Quantify or describe each measure for the "no action", proposed action, and other alternatives, including any potential cumulative actions.	
Decide on documentation in an environmental assessment or environmental impact statement.	Prepare specialist's reports.	
	Present alternatives analysis to public and line officer.	

STEP 8 PRODUCTS
• Specialists Reports. • Preferred or selected alternative chosen. • Environmental assessment or environmental impact statement chosen as type of document. • Updated process record and index.

IRM • STEP 9 - DOCUMENT ANALYSIS AND DECISION

STEP OBJECTIVE

Write it down. Prepare environmental documents. Notify the public of the decision.

NARRATIVE

For those actions that can be categorically excluded, the IRM process resumes with this step from Step 6. Prepare a decision memo and process record for those excluded actions required to have decision memos and process records. For those categorically excluded actions that do not require a decision memo or process record, proceed to Step 10.

For projects not categorically excluded, the analysis and process record will be summarized in an environmental assessment or environmental impact statement. The environmental assessment or environmental impact statement will summarize the analysis for all alternatives analyzed in detail. If an environmental assessment is done and effects are not significant, a finding of no significant impact is prepared.

A biological assessment and evaluation summarizes the threatened, endangered, and sensitive species information from the process record for the selected or preferred alternative and makes appropriate findings.

Cultural resource clearances are obtained on the selected or preferred alternative.

Consultation with US Fish and Wildlife Service for threatened, endangered, or proposed species is done on the selected or preferred alternative.

For selected alternatives that involve actions on grazing permits or special use permits, show cause letters or cure notices should be issued to permittees at this step and before decision documents are executed. The time for review and comment on the show cause letter or cure notice should be provided between environmental documentation and the decision. In cases where a comment period is provided on environmental documents, the time periods may run concurrently.

The interdisciplinary team should prepare a monitoring plan for the selected alternative. The monitoring plan should be based on the overview monitoring program developed in Step 4. The monitoring plan for the selected alternative should provide sampling opportunities, if needed, as identified in the overview program. It is not expected that every selected alternative would be monitored.

Once the environmental documents are prepared, cultural resource clearances are obtained, consultation on threatened, endangered, or proposed species is completed; and show cause letters have been issued in permit situations, either a decision notice or record of decision and permit action letter is prepared. At this point, notice of the decision is published and the appeal period is initiated. In permit situations the permittee can elect which appeal rule to follow, but is limited to only one appeal opportunity.

Line officers ensure the process record is complete, well organized, and indexed before signing decision documents.

STEP 9 ROLES AND RESPONSIBILITIES

Line Officer	Interdisciplinary Team	Public
Prepare, sign decision memos.	Prepare environmental assessment or environmental impact statement.	Review and comment on draft documents.
Ensure adequate process record and index.	Prepare biological assessment and evaluation report.	Appeal as appropriate.
Prepare, sign decision notices and records of decision.	Prepare finding of no significant impact.	
Approve finding of no significant impact.	Initiate consultation and clearance processes.	

STEP 9 ROLES AND RESPONSIBILITIES (cont.)

Line Officer	Analysis Team	Public
Approve monitoring plan.	Publish notice of decision.	
Issue show cause letters or cure notices in permit situations.	Process appeals.	
Issue notice of permit action in permit situations.	Develop monitoring plan for selected alternative.	

STEP 9 PRODUCTS

- Environmental documents - environmental assessment, environmental impact statement, finding of no significant impact, biological assessment and evaluation.
- Show cause letter or cure notice on permit actions.
- Decision documents - decision memo, decision notice, record of decision, or notice of permit actions.
- Cultural resource clearance on selected alternative.
- US Fish and Wildlife Service opinion on selected alternative.
- Published legal notice of decision.
- Appeals and appeal decision letters.
- Complete process record and index.
- Updated data bases.
- Approved monitoring plan for selected alternative.

IRM • STEP 10 - IMPLEMENT ACTION

STEP OBJECTIVE

Do it.

NARRATIVE

A work plan is prepared to implement the action.

The work plan is assembled by gathering together all of the specific instructions necessary to carry out the project in the manner specified by the final decision. It should specifically designate who should accomplish each item and establish both the sequence and time frame for each activity. It is usually a good idea to include the people that will be administering implementation of the action at this step so that field administrators fully understand the action and needed mitigation measures.

This is the "do it" step of any action. The design is "laid out" on the ground, final checks are made by the design team or responsible official, appraisals are completed, allotment management plans are prepared, any necessary contracts or permits are written and awarded, and/or the agency people accomplish the action along with any necessary protection of other resources. This is the move from the paper product to the ground.

In this step, it often becomes apparent that certain tasks can be accomplished in a more cost effective manner than planned. Every effort should be taken to use the least costly method to accomplish actions, subject to all the provisions identified during the previous steps.

Actions must be administered and monitored as they are executed. Small changes in design may be necessary to reduce impacts, cope with unforeseen events, etc. Changes in design should be documented "as built" for the process record.

STEP 10 ROLES AND RESPONSIBILITIES

Line Officer	Interdisciplinary Team	Public
Approve work schedule.	Monitor and administer implementation.	Monitor.
Approve final implementation documents, i.e., permits, etc.		

STEP 10 PRODUCTS

- Final maps, photos, and designs.
- Final implementation guides and/or prescriptions.
- Specific schedule of all activities associated with the action (work plan).
- Final clearances, licenses, permits, forms, etc.
- Post-project monitoring and evaluation schedule.
- Contract documents developed, if appropriate.
- Bid openings accomplished.
- Awarded contracts if needed.
- Completed project with appropriate project administration.
- Resource objectives met.
- Forest plan implemented.
- Project design amended as needed.
- Project "as built" description, maps, etc.
- Updated data bases.
- Updated process record and index.

IRM • STEP 11 - MONITOR AND EVALUATE RESULTS

STEP OBJECTIVE

Is it working? Determine if the action was implemented as designed and if the action achieved the desired results. Determine if desired conditions are being achieved.

NARRATIVE

As the action is proceeding, monitor implementation to ensure the action is being done according to design standards. It is not reasonable to assume the original design will be perfect. Implementation must be monitored to ensure that designs are adjusted when on-the-ground conditions warrant (eg., finding a previously unknown raptor nest or cultural resource site).

After a successful action is accomplished, the recycling of knowledge concerning "what works and what doesn't work" should be done. Professionals have an obligation to continually reasses successes and failures to improve designs. A review of activities, costs, outputs, effects, and results should be included. Internal information sharing concerning the action is vital to provide quality on-the-ground management. The public should be given the facts, even if they sometimes reflect failures. However, the more that is learned about the action, the less likely there will be future failures.

Two basic questions must be answered when monitoring actions. The first question is "did the action get implemented as designed by the interdisciplinary team?" (i.e., Implementation Monitoring). Secondly, "did the action give the desired results" (Effectiveness Monitoring). Implementation monitoring should be accomplished on all actions. Effectiveness monitoring is not feasible on every action. Based on the forest plan monitoring plan, issues, differences between existing and desired conditions, and the monitoring program developed in Step 4, each district should have a monitoring plan which identifies priority needs for effectiveness monitoring. Actions should then be selected for effectiveness monitoring on a sample basis as part of the district program. Not every action would be monitored for effectiveness. The public should be asked to participate in implementation and effectiveness monitoring. There may also be opportunities to develop partnerships for monitoring with the public.

Implementation and effectiveness monitoring provide vital information for revision or amendment of forest plans and for design of subsequent actions.

A third type of monitoring (Validation Monitoring) should be done to validate the assumptions made about how ecosystems may respond to an action. This type of monitoring usually requires the involvement of research. The need for validation monitoring should be identified and coordinated with research organizations.

Monitoring is the final milestone on the road to ecosystem management. An ecosystem approach requires adaptive management that is taking "small steps" (i.e., incremental actions to move from existing to desired conditions) and looking around a lot (i.e., monitoring).

Annual monitoring reports should be prepared.

STEP 11 ROLES AND RESPONSIBILITIES

Line Officer	Interdisciplinary Team	Public
Approve monitoring plan.	Conduct effectiveness monitoring.	Participate in monitoring.
Approve actions selected as samples.	Prepare annual monitoring report.	Review and comment on monitoring reports.
Assign implementation monitoring.	Consider monitoring results in design of new actions.	
Approve annual monitoring report.		

STEP 11 PRODUCTS
• Unit (district or forest) effectiveness monitoring plan. • Annual monitoring reports. • Implementation monitoring reports; inspections, etc. • Updated process record and index. • Identification of validation monitoring and research needs.

The following summarizes requirements for Forest Service coordination with local government agencies under the implementing regulations for the National Environmental Policy Act (NEPA) and the National Forest Management Act (NFMA). Most of these requirements also apply to coordination with Indian tribes.

NEPA REQUIREMENTS SUMMARY

- Cooperate to develop joint planning, research, public hearings, and environmental assessments when there are duplications between NEPA and local requirements to the fullest extent possible.

- In environmental impact statements, discuss any inconsistencies between a proposed action and local plans or policies.

- Prepare joint environmental impact statements whenever possible.

- In environmental assessments discuss any inconsistencies between a proposed action and local plans or policies to the extent effects on local plans and policies have been raised as issues.

- Consult local governments early and invite their participation and comments on all proposed actions.

- Provide notice of public hearings or meetings.

- Consult on significance of preliminary issues with local governments.

- Inform local government of scoping results using personal contacts.

- Discuss possible effects of alternatives with local government.

- Provide copies of FONSI's and environmental documents.

- Consider designating local agencies as joint lead or cooperating agencies for EIS and EA preparation.

- Make monitoring results available.

NFMA REQUIREMENTS SUMMARY

- Coordinate with equivalent and related local government planning.

- Give notice to local government simultaneous with publication of Notice of Intent.

- Review local planning and land use policies and display in the forest plan environmental impact statement.

    - Consider objectives of local governments.
    - Assess interrelated impacts of local plans and policies.
    - Determine how plans will deal with impacts.
    - Develop alternative to deal with conflicts.

- Have at least 3 meetings with local officials.

    - At the beginning to develop coordination procedures.
    - After issues have been identified.
    - Prior to selecting preferred alternative.

- Seek input on research needs.

- During monitoring, consider the effects of national forest management on local government jurisdictions.

RECOMMENDATIONS

To comply with all of the NEPA and NFMA requirements Forest Service employees should consider:

- Developing memoranda of understanding to define how joint planning will be carried out.

- Becoming familiar with local government requirements and the issues affecting local communities.

- Inviting local agency participation on all proposed actions in writing early in the process.

- Making an extra effort to keep local agencies informed as planning progresses.

- Recognizing and displaying the conflicts between proposed actions and local agency requirements.

IRM • APPENDIX B - PUBLIC INVOLVEMENT REQUIREMENTS

PRESCOPING REQUIREMENTS

• Prepare and distribute schedule of proposed actions every 3 months.

• Begin forest planning public participation activities with a media notice and provide at least 30 days notice of pending public participation activities.

• Give notice to states, Indian tribes, and local governments simultaneous with publication of the notice of intent (NOI) to prepare an environmental impact statement (EIS) for a forest plan.

SCOPING REQUIREMENTS

• Conduct scoping on all proposed actions.

• Invite participation of affected Federal, state, and local agencies, any Indian tribe, the proponent of the action, and other interested people.

• Hold or sponsor public hearings or meetings when appropriate.

• Provide public notice of hearings or meetings and availability of environmental documents.

• Provide notice of an individual action to those who have requested it.

• Inform participants and the public of scoping and progress of analysis.

ALTERNATIVES

• Explore possible alternatives during scoping and public participation activities.

• Discuss feasibility and possible effects of alternatives with potentially affected and interested people.

ENVIRONMENTAL IMPACT STATEMENTS

• Distribute draft and final environmental impact statements to other agencies and the public prior to or at the same time of filing with the Environmental Protection Agency (EPA).

• Send the entire final environmental impact statement (FEIS) to any person who submitted substantive comments on the draft environmental impact statement.

• Allow a minimum of 45 days to comment on a draft environmental impact statement (DEIS). Forest plans require a minimum 90 day comment period.

DECISION NOTIFICATION

• Distribute decision documents to interested and affected people and those who participated in the process.

• Make the finding of no significant impact (FONSI) available to the public. Most agencies are required to allow a 30 day public review period for FONSI's. Presently, the Forest Service does not have this requirement but is proposed in the pending appeal rule.

• Allow a minimum of 45 days to comment on a draft environmental impact statement. Forest plans require a minimum 90 day comment period.

• Publish notice of availability of the decision in a newspaper of general circulation.

MONITORING

• Make available monitoring results.

OTHER

• Set process time limits when requested by the public.

IRM • APPENDIX C - DEFINITION OF TERMS

ADAPTIVE ECOSYSTEM MANAGEMENT: Implementation of ecosystem management as a series of management experiments which uses rapid feed back, evaluation, and management redirection to be applied to subsequent experiments.

BIODIVERSITY: Variety of life and its processes within communities and ecosystems.

BIOMASS: The total quantity (weight) of plants and animals per unit area.

BIOTA: The living components of an ecosystem or community.

CANDIDATE SPECIES: A species being considered for listing as federally endangered or threatened.

CAPABILITY: The potential of an ecosystem management area to produce resources, supply goods and services, and allow resource uses under a set of management practices.

CLIMAX COMMUNITY: The final or stable biotic community in a successional series which is self-perpetuating and in dynamic equilibrium with the physical habitat; the assumed end point in succession.

COMMUNITY: An assemblage of populations of plants and/or animals in a common spatial arrangement with no particular ecological status implied.

CONSERVATION: The careful protection, utilization and planned management of resources to prevent their depletion, exploitation, destruction, or waste.

CONSERVATION BIOLOGY: The body of knowledge that deals with the careful protection, utilization, and planned management of living organisms and their vital processes to prevent their depletion, exploitation, destruction, or waste.

CUMULATIVE EFFECTS ANALYSIS: An analysis of the effects on an ecosystem which results from the incremental impact of a proposed action when added to other past, present, and reasonably foreseeable future actions.

DESIRED CONDITION: A description of the desired human dimensions, production, and physical/biological characteristics to be achieved on an ecosystem management area.

DIVERSITY: The distribution and abundance of different plants and animal communities within an area.

ECOLOGY: The study of the interrelationships of organisms with their environment.

ECOLOGICAL PROCESSES: The actions or events that link organisms and their environment.

ECOSYSTEM: The dynamic system formed by the interaction of biotic and abiotic components and their environment.

ECOSYSTEM HEALTH: The ability of an ecosystem to maintain its complexity and resiliency.

ECOSYSTEM INTEGRITY: The ability of an ecosystem to retain its diversity and inherent organization.

ECOSYSTEM MANAGEMENT: Consideration of the interrelationships at different scales of time and space between living organisms and their environment in providing for sustainable multiple-use objectives and desired conditions while striving to achieve a balance between the environment and the health and vitality of people and communities who depend on the land.

ECOSYSTEM MANAGEMENT AREA: An administratively delineated contiguous subdivision of a forest planning area of approximately 10,000 to 100,000 acres. Ecosystem management areas are the basic planning areas for applying ecosystem management principles and for which existing and desired conditions are defined. These areas have previously been called 10K blocks, diversity units, FPILU's, opportunity areas, etc. These areas or combinations of these areas would replace original management areas in forest plans as amendments and revisions are made.

ENVIRONMENT: All the biotic, abiotic, and climatic factors of a site.

EXISTING CONDITION: A description of present day human dimensions, production and physical/biological characteristics of an area.

EXOTIC SPECIES: Species which occur in a site or region as the result of direct or indirect, deliberate or accidental introduction of the species by humans, and for which introduction has permitted the species to cross a natural barrier to dispersal.

FOREST CANOPY: The soil surface cover of branches and foliage formed collectively by tree crowns.

FRAGMENTATION: Breaking up of contiguous areas into progressively smaller patches of increasing degrees of isolation.

HABITAT: The environmental complex in which an organism lives.

HABITAT TYPE: The ecological site which a plant association occupies, or will occupy as succession advances.

HISTORIC VARIATION: Change in composition, structure, and function of an ecosystem over time as influenced by the frequency, magnitude, and pattern of disturbances.

HOME RANGE: The geographic area within which an animal restricts its activities.

HUMAN DIMENSION: Information about people's traditional and changing perceptions, beliefs, attitudes, behaviors, needs, values, roles, and the past, present and possible future influences of humans on ecosystems.

INTEGRATED PEST MANAGEMENT: A pest management philosophy based on an understanding of ecosystem growth and development, ecosystem pest dynamics, and the interaction of the two.

INTEGRATED RESOURCES MANAGEMENT: The simultaneous consideration of ecological, physical, economic, and social aspects of natural resources in developing and carrying multiple-use, sustained-yield management.

INTEGRATED RESOURCE MANAGEMENT PROCESS: The 11 steps used in the Southwestern Region to guide identification and design of proposed actions and which incorporates the principles of ecosystem management and integrated resource management.

LANDSCAPE: A heterogeneous land area composed of a cluster of interacting ecosystems that is repeated in similar form throughout.

LISTED SPECIES: A species included on the federal threatened or endangered list.

MULTIPLE-USE: The management of the lands and their various resource values so they are used in the combination that best meets the present and future needs of the American people while maintaining ecosystem sustainability.

POPULATION: A group of individuals with common genetics.

POTENTIAL NATURAL COMMUNITY: The vegetation that would become established in an area in the absence of people under present climatic and site conditions but without an assumption that it was a return to climax conditions existing prior to human disturbance.

PRECOLUMBIAN CONDITIONS: A description of human dimensions, production, and physical/biological conditions that may have existed on an area prior to exploration and settlement by people of European descent.

RESPONSIBLE OFFICIAL: The Forest Service employee who has the delegated authority to make and implement a decision.

RIPARIAN ECOSYSTEM: Transitional ecosystems between terrestrial and aquatic ecosystems.

SENSITIVE SPECIES: A species not formally listed as endangered or threatened, but thought to be at risk and included on the list maintained by the Regional Forester.

SPECIES: A genetically unique organism that is capable of interbreeding freely but not with members of other species.

SUSTAINABILITY: The ability to sustain diversity, productivity, resilience to stress, health, renewability, and/or yields of desired values, resource uses, products, or services from an ecosystem while maintaining the integrity of the ecosystem over time.

TERRESTRIAL ECOSYSTEM: A land based ecosystem. An interacting system of soil, geology, topography, plant and animal communities.

VIABILITY: The likelihood of continued existence in an area for some specified period of time.

IRM • APPENDIX D - COMMON ACRONYMS

AMP	ALLOTMENT MANAGEMENT PLANS
ASQ	ALLOWABLE SALE QUANTITY
BLM	BUREAU OF LAND MANAGEMENT
BA&E	BIOLOGICAL ASSESSMENT AND EVALUATION
CE	CATEGORICAL EXCLUSION
CEQ	COUNCIL ON ENVIRONMENTAL QUALITY
CPP	CITIZENS PARTICIPATION PLAN
COR	CONTRACTING OFFICERS REPRESENTATIVE
CP	CITIZENS PARTICIPATION
DG	DATA GENERAL
DM	DECISION MEMO
DN	DECISION NOTICE
EA	ENVIRONMENTAL ASSESSMENT
EIS	ENVIRONMENTAL IMPACT STATEMENT
EMA	ECOSYSTEM MANAGEMENT AREA
ESA	ENDANGERED SPECIES ACT
FLPMA	FEDERAL LAND PLANNING AND MANAGEMENT ACT (BLM ORGANIC ACT)
FONSI	FINDING OF NO SIGNIFICANT IMPACT
FY	FISCAL YEAR
GIS	GEOGRAPHIC INFORMATION SYSTEM
IRM	INTEGRATED RESOURCE MANAGEMENT
LMP	LAND MANAGEMENT PLANNING
MIS	MANAGEMENT INDICATOR SPECIES
NEPA	NATIONAL ENVIRONMENTAL POLICY ACT OF 1969
NFMA	NATIONAL FOREST MANAGEMENT ACT OF 1976
NOI	NOTICE OF INTENT
NPS	NATIONAL PARK SERVICE
NRA	NATIONAL RECREATION AREA
PAI	POTENTIALLY AFFECTED INTEREST
ROD	RECORD OF DECISION
RNA	RESEARCH NATURAL AREA
SCS	SOIL CONSERVATION SERVICE
SEACA	SUBSTANTIAL EFFECTIVE AGREEMENT ON A COURSE OF ACTION
S&G	STANDARD AND GUIDELINE
SHPO	STATE HISTORICAL PRESERVATION OFFICER
TCP	TRADITIONAL CULTURAL PROPERTY
T&E	THREATENED AND ENDANGERED SPECIES
TES	THREATENED, ENDANGERED AND SENSITIVE SPECIES
TES	TERRESTRIAL ECOSYSTEM SURVEY
USGS	UNITED STATES GEOLOGIC SURVEY
USFWS	UNITED STATES FISH AND WILDLIFE SERVICE

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